Investigating Factors Affecting the Usability of Software Process Descriptions

Naz'ri Mahrin, David Carrington, Paul Strooper

School of Information Technology and Electrical Engineering
The University of Queensland, St. Lucia
4072 Queensland, Australia

Terminology

- A software process description is a representation of a software process created to facilitate:
  - Communication
  - Enactment
  - Evaluation
  - Improvement
- A Usability Factor is:
  - An attribute of software process descriptions that affects its usability

Research Question & Method

- What factors make software process descriptions usable?
- We investigated three sources of information:
  - Literature on software process descriptions
  - Survey of practitioners at the 5th Australian SEPG Conference
  - Process metamodels (SPEM2, UMA and OPF)

Contents

- Usability Factors Investigation Results
  - Factors from Literature
  - Factors from Exploratory Survey
  - Factors from Process Metamodels
- Software Process Descriptions Comparative Review
  - Criteria
  - Selected Process Descriptions
  - Findings
- Conclusions and Future Work

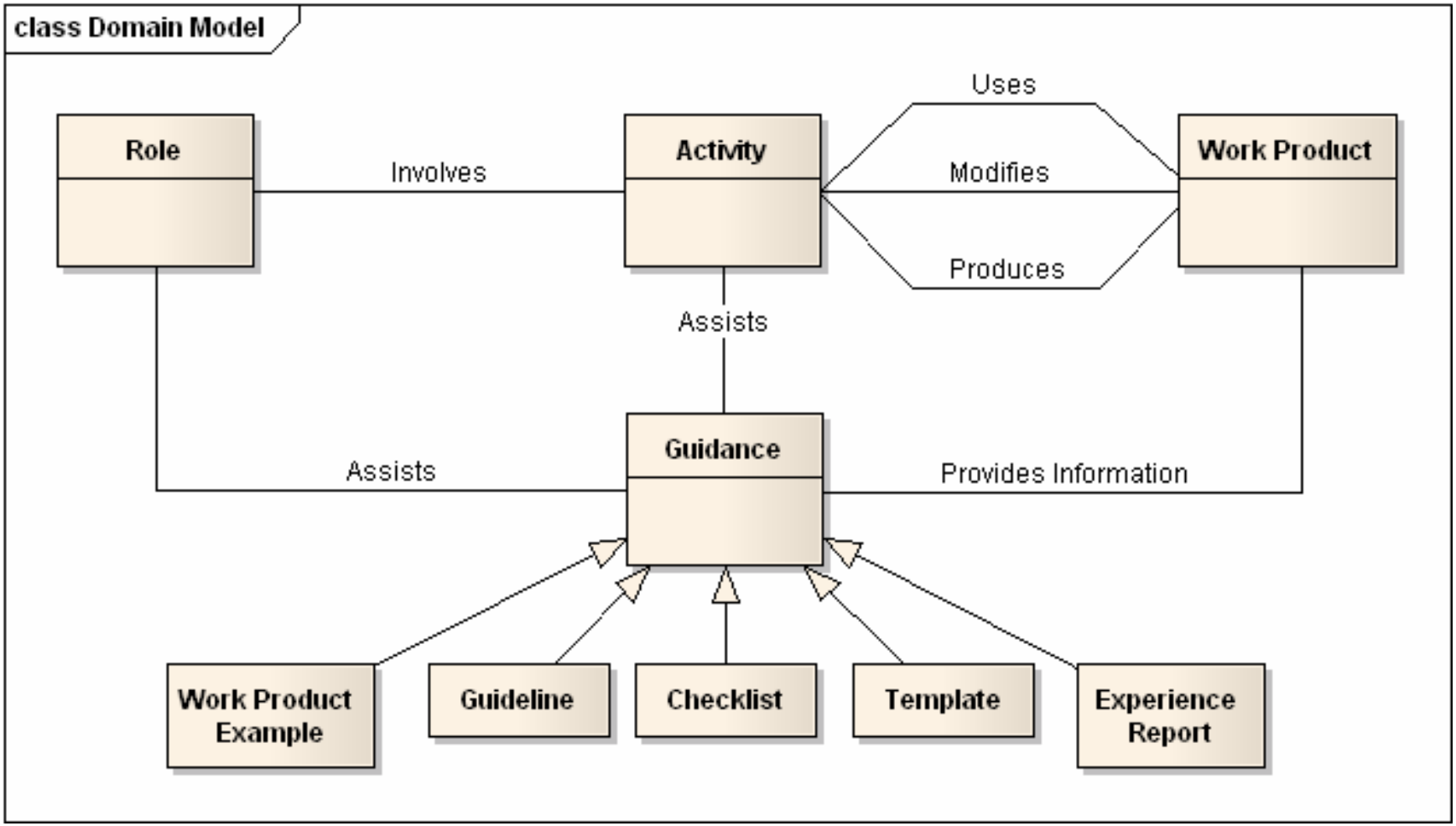
Factors from Literature

- Search keys:
  - Software process descriptions
  - Process guides
- 4/15 papers relevant to usability.
- A partial list of the 19 collected factors:
  - Up-to-date
  - Tailorable
  - Well-structured
  - Consistent presentation style
  - Effective diagrams, tables and narrative

Factors from Exploratory Survey

- Survey at the 5th Australian SEPG Conference.
- Distributed ~70 questionnaires: 14 returned.
- Some 25 potential factors listed by survey respondents:
  - Simple
  - Reusable
  - Tailorable
  - Operable
  - Understandable

Factors from Process Metamodels



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Criteria

- The selected factors (8/31) for comparative review are:
  - Tailoring guide
  - Supported by guidance
  - Well-structured
  - Use a process metamodel
  - Consistency of presentation style
  - Searching feature and help support
  - Use of diagrams, tables and narrative
  - Enable integration with CASE tools

Selected Process Descriptions

- Three process descriptions were evaluated:
  - Personal Software Process (PSP) - PSP0
  - Open Unified Process (OpenUP) V1.0
  - Unified Process for Education (UPEDU)

Findings – Criteria Based

Criteria	Software Process Descriptions		
	OpenUP (V1.0)	**UPEDU**	**PSP0**
Tailoring guide	Yes (w/product only)	Yes (w/product only)	No
Searching and help feature	Yes (web search & help)	Yes (web search & help)	Yes (index & text book)
Integration with CASE tool	No	No	No
Use of process metamodels	Yes (UMA)	Yes (USPM)	No
Use of diagrams, tables and narrative	Yes	Yes	Yes
Consistency of presentation style	Yes	Yes	Yes
Well-structured	Yes	Yes	Yes
Supported by guidance	Yes	Yes	Yes (w/product only)

Findings – Work Product Guidance

Process Description	Guidance Type			
	Template	**Example**	**Checklist**	**Guideline**
OpenUP [Architecture (1), Development (4), Project Mgmt. (4), Req. (5), Test (3)]	12/17	5/17	13/17	9/17
UPEDU [Req. (7), Analysis & Design (6), Imp. (4), Test (5), Config. Mgmt. (2), Project Mgmt.(8)]	21/32	32/32	13/32	17/32
PSP0 [Planning (3), Development (4)]	4/7	6/7	0/7	5/7

Legend: [Phase Name (Number of new work products)]

Gaps & Issues

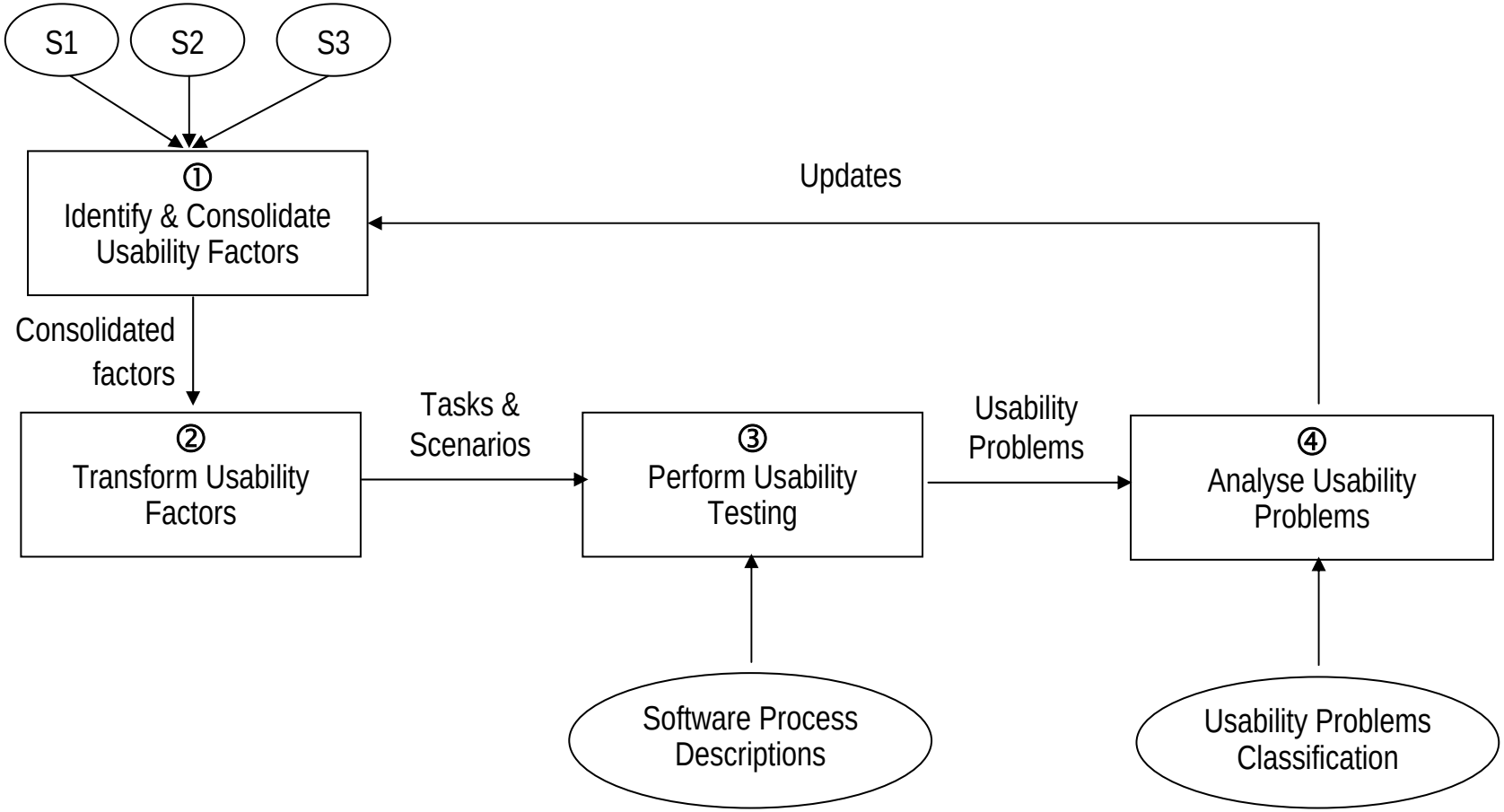
- What sort of tailoring guide is useful to support tailoring process?
- Do process metamodels support extensible, configurable, tailorable (and usable) process descriptions?
- What work product guidance types are more effective for supporting the usability of process descriptions?

Contents

Conclusions and Future Work

- We have not yet evaluated the identified usability factors.
- Other aspects that still need elaboration:
  - Validate identified usability factors – expert judgment
  - Evaluate the effectiveness of these usability factors for identifying usability problems
  - Incorporate these usability factors into a usability evaluation framework

Usability Evaluation Framework



Any Questions?

Thank You!